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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/021,785	12/14/2001	Robert Barry Leholm	A33884-A - 007220.0159(20	3429

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EXAMINER
COOKE, COLLEEN P

ART UNIT	PAPER NUMBER
1725	7

DATE MAILED: 07/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/021,785	LEHOLM ET AL.	
	Examiner	Art Unit	
	Colleen P Cooke	1725	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 April 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,5-12,16,17,20-27 and 31-34* is/are rejected.

7)☒ Claim(s) *3,4,13-15,18,19 and 28-30* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a)☐ The translation of the foreign language provisional application has been received.

15)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6 .
4)☐ Interview Summary (PTO-413) Paper No(s). _____ .
5)☐ Notice of Informal Patent Application (PTO-152)
6)☐ Other: .

Response to Arguments

Applicant's arguments filed 4/29/03 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 2, 5-12, 16, 17, and 20-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Norris et al. (4869421) in view of Strutt et al. (6475637).

Norris et al. teaches in Figure 1 providing a Ti-Al alloy honeycomb core (12) (see Column 2, lines 49-54) and a Ti-Al alloy facing sheet (16), positioning therebetween a metal braze filler foil (14) (see Column 2, lines 66-67), applying pressure to the assembly and heating the assembly for a sufficient amount of time to join the honeycomb core and the facing sheet (see Column 3, lines 40-52). Norris et al. teaches that the braze filler foil has a nickel-copper composition, and therefore does not teach that the foil includes titanium and zirconium as required by the claim.

Strutt et al. also teaches a diffusion bonding process and product for a titanium alloy honeycomb core and panel also which makes use of a braze filler foil (see abstract). Strutt et al. is concerned particularly with the filler foil, and teaches that the invention uses a foil of copper and nickel, and also titanium and zirconium (see Column 2, lines 7-9).

Norris et al. and Strutt et al. are analogous art because they are from the same field of endeavor, which is joining of titanium alloy honeycomb cores and facing sheets. It would have been obvious to modify the metal foil or Norris et al. by adding titanium and zirconium because Strutt et al. teaches that doing so allows for a thicker foil than is possible with only copper and nickel and that this provides various advantages to the joint formed (see Column 2, lines 9-20).

With respect to claims 2 and 17, Norris et al. teaches specifically that one of the alloys to be used is gamma titanium aluminide (Column 2, lines 59-62).

With respect to claims 7, 8, 22, and 23, Norris et al. teaches that the foil can be 0.000025-0.003 inches in thickness (Column 3, lines 25-27).

With respect to claims 9 and 24, Norris et al. teaches that the foil can be formed by electrodeposition, powder deposition, plasma spraying, or vapor deposition or the like (Column 3, lines 21-25). Strutt et al. teaches that the foil in a particularly preferred embodiment may be formed by rapid solidification or melt spinning (Column 4, lines 62-64) by methods known in the art.

With respect to claims 10, 11, 25, and 26, Norris et al. teaches that the assembly is heated to from 1600° to 2000° F for between 30 minutes and 16 hours, using shorter times for higher temperatures or in situations where less diffusion may be desired (Column 3, lines 56-61). It would have been obvious to one of ordinary skill in the art at the time the invention was made to adjust the time and temperature within the ranges described, since it has been held that discovering an optimum value or a result effective variable involved only routine skill in the art. In re Boesch, 617 F.2nd 272, 205 USPQ 215 (CCPA 1980). The artisan would have been

motivated to set the time and temperature by the reasoned explanation that doing so will determine the degree of diffusion during heat-treating, as taught by Norris et al.

With respect to claims 12 and 27, Norris et al. teaches that the heat-treating may take place in a vacuum (Column 3, lines 53-55).

Claims 31-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Norris et al. (4869421) in view of Strutt et al. (6475637), and further in view of Smith et al. (5403411).

Norris et al. teaches in Figure 1 providing a Ti-Al alloy honeycomb core (12) (see Column 2, lines 49-54) and a Ti-Al alloy facing sheet (16), positioning therebetween a metal braze filler foil (14) (see Column 2, lines 66-67), applying pressure to the assembly and heating the assembly for a sufficient amount of time to join the honeycomb core and the facing sheet (see Column 3, lines 40-52). Norris et al. teaches that the braze filler foil has a nickel-copper composition, and therefore does not teach that the foil includes titanium and zirconium as required by the claim. Norris et al. also does not specifically teach using an orthorhombic titanium aluminide, but does teach specifically using alpha 2 alloys.

Strutt et al. also teaches a diffusion bonding process and product for a titanium alloy honeycomb core and panel also which makes use of a braze filler foil (see abstract). Strutt et al. is concerned particularly with the filler foil, and teaches that the invention uses a foil of copper and nickel, and also titanium and zirconium (see Column 2, lines 7-9).

Smith et al. teaches that the orthorhombic alloys are similar to the alpha 2 alloys but with additional beta stabilizer which stabilizes the orthorhombic phase of the alloy.

With respect to claims 33 and 34, Norris et al. teaches that the titanium aluminide may be gamma titanium aluminide, while Smith et al. teaches that the orthorhombic phase may be used.

Norris et al. and Strutt et al. are analogous art because they are from the same field of endeavor, which is joining of titanium alloy honeycomb cores and facing sheets. It would have been obvious to modify the metal foil of Norris et al. by adding titanium and zirconium because Strutt et al. teaches that doing so allows for a thicker foil than is possible with only copper and nickel and that this provides various advantages to the joint formed (see Column 2, lines 9-20).

Norris et al. and Smith et al. are analogous art because they are from the same field of endeavor, which is high strength titanium aluminide articles. It would have been obvious to modify the titanium aluminide articles of Norris et al. by using an orthorhombic titanium aluminide because Smith et al. teaches that it is substantially similar to the alpha 2 titanium aluminide taught by Norris et al.

Allowable Subject Matter

Claims 3-4, 13-15, 18-19, and 28-30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art of record does not teach or suggest a honeycomb panel or method of making including bonding a Ti-Al core to a Ti-Al facing sheet with a braze foil having a copper, titanium, zirconium, and optionally nickel composition, including that the core is orthorhombic while the sheet is gamma Ti-Al, or that both the sheet and core are orthorhombic.

Conclusion

Any inquiry concerning this or earlier communications from the examiner should be directed to Colleen Cooke, whose telephone number is 703-305-1136. She can normally be reached Monday-Thursday from 7:15-5:45pm.

If attempts to reach the examiner by telephone are unsuccessful, her supervisor, Thomas Dunn, can be reached at 703-308-3318. The official fax number for the organization where this application or proceeding is assigned is 703-305-6078. The unofficial fax number for this examiner is 703-746-3048.

Any inquiry of a general nature relating to the status of this application or proceeding should be directed to the receptionist, whose telephone number is 703-308-0661.

CPC 7/8/2003

TOM DUNN
SUPERVISORY PATENT EXAMINER
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